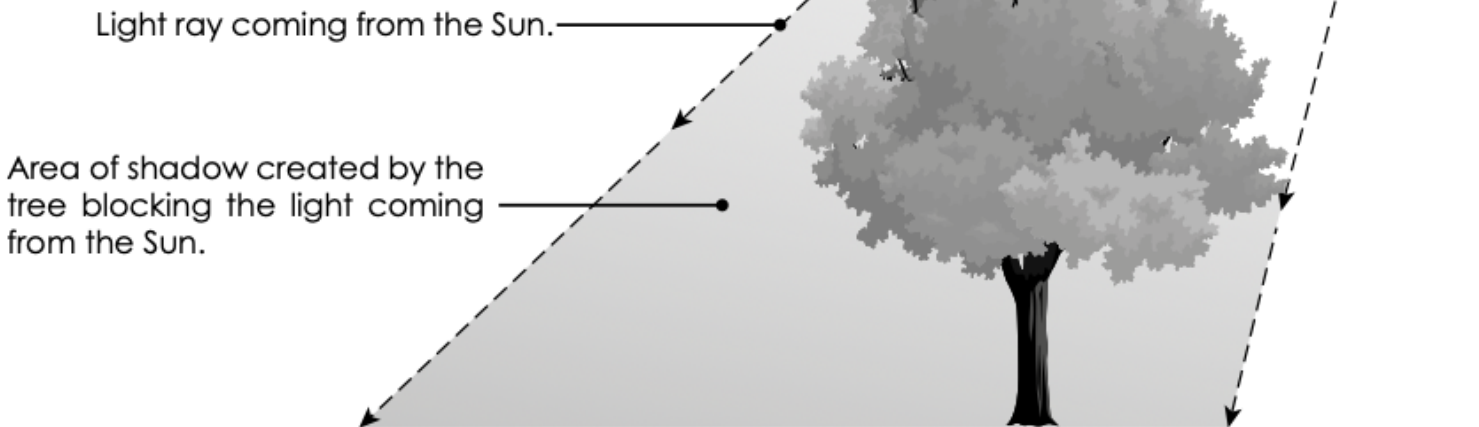


Light Moves in Straight Lines

Once light leaves its source it travels in straight lines. If there is something opaque between you and the path of light, you will be in a shadow, where there is less light.

A shadow is an area that light cannot travel to because it is being blocked. Objects that block light are called *opaque*. Objects that allow all light to pass through are called *transparent*. Objects that allow only some light through are called *translucent*.

The easiest way to find out where a shadow will be is by drawing just two light rays going from the light source, one passing the top of the object, and one passing the bottom of the object.



The light rays coming out of a light source usually travel in all directions, away from the light source. In science, it is not necessary to draw all the light rays, only those that are directly related to what you are observing.

- Decide whether the following objects are *opaque*, *transparent* or *translucent*.
 - A window _____
 - A cloud _____
 - A can of cola _____
 - A dog _____
 - A mirror _____
 - A glass of milk _____
 - This book _____
 - Frosted glass _____
- Draw light rays on the following diagram to show how a shadow would form. Colour in the area of shadow. Don't forget to put arrows on your light rays to show where the light is coming from.



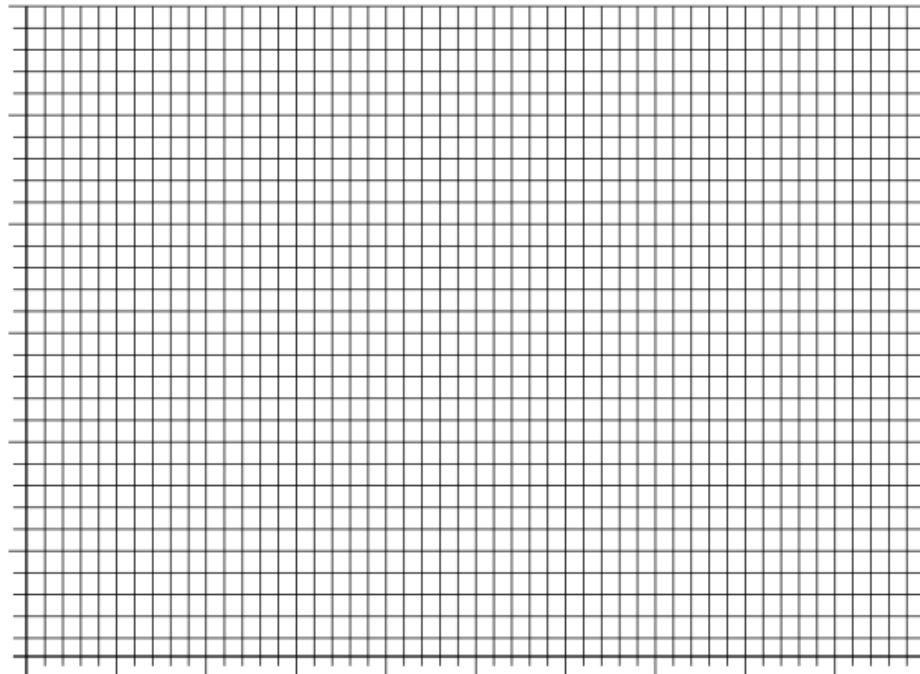
Forming Shadows

For a science project a student decided to investigate the cause of shadows. She noticed that throughout the day the length of a tree's shadow changed. On a sunny day she measured the length of the shadow every hour and got the following set of results:

Time (hr)	Shadow length (m)
7:00 am	22
8:00 am	20
9:00 am	12
10:00 am	7
11:00 am	4
12:00 noon	0.5
1:00 pm	3
2:00 pm	8
3:00 pm	13
4:00 pm	23

1. Use the data to plot a line graph of 'Shadow Length vs Time' on the graph paper below.

2. Explain how shadows are formed. _____



3. What two times are the shadow the longest? _____

4. When are the shadows the shortest? _____

5. Using the diagram below, draw the position of the Sun at the times indicated in question 3. Draw light rays to show how the shadows form at 13.00 hours.

